

# **BLANCHARD RIVER WATERSHED STUDY**

## **DRAFT INTERIM FEASIBILITY STUDY**

### **APPENDIX G**

#### **ABBREVIATED RISK ANALYSIS**



**April 2015**

**BLANCHARD RIVER WATERSHED**  
**DRAFT INTERIM FEASIBILITY STUDY**

**APPENDIX G**  
**ABBREVIATED RISK ANALYSIS**

**April 2015**

# Abbreviated Risk Analysis

## Blanchard River Flood Control Study, Findlay Ohio Feasibility (Recommended Plan)

Meeting Date: 2-Nov-14

### PDT Members

Note: PDT involvement is commensurate with project size and involvement.

Project Management:	Mike Pniewski
Planner:	Laura Ortiz
Study Manager:	NAME
Contracting:	NAME
Real Estate:	Jennifer Janik, Paula Kohl
Relocations:	NAME
OTHER:	Steve Stalikes
Engineering & Design:	NAME
Technical Lead:	NAME
Geotech:	Reed Vetovitz
H&H	NAME
Civil:	NAME
Structural:	NAME
Mechanical:	NAME
Electrical:	NAME
Cost Engineering:	Paul Polanski, Paul Heist
Construction:	NAME
Operations:	NAME
Environmental:	NAME
VE	NAME
DOT & PF Sponsor	NAME
DOT & PF Sponsor	NAME
OTHER:	NAME
OTHER:	NAME
OTHER:	NAME
OTHER:	NAME

### Abbreviated Risk Analysis

Project Name & Location: **Blanchard River Flood Control Study, Findlay Ohio**  
 Project Development Stage/Alternative: **Feasibility (Recommended Plan)**  
 Risk Category: **Moderate Risk: Typical Project Construction Type**

District: **Buffalo**  
 Alternative: **100 year design (TSP)**  
 Meeting Date: **11/2/2014**

Total Estimated Construction Contract Cost = \$ **46,355,900**

	CWWBS	Feature of Work	Contract Cost	% Contingency	\$ Contingency	Total
	WBS 01, 02 & 08 LANDS AND DAMAGES	Real Estate	\$ 20,583,400	25.00%	\$ 5,145,850	\$ 25,729,250
1	15 FLOODWAY CONTROL AND DIVERSION STRUCTURES	Water Control Structure	\$ 1,241,300	19.98%	\$ 247,977	\$ 1,489,277
2	06 FISH AND WILDLIFE FACILITIES	Streams & Wetland Mitigations	\$ 1,405,600	22.25%	\$ 312,677	\$ 1,718,277
3	09 CHANNELS AND CANALS (Except Navigation Ports and Harbors)	Diversion Channel	\$ 20,913,000	30.91%	\$ 6,464,155	\$ 27,377,155
4	11 LEVEES AND FLOODWALLS	Levees	\$ 1,624,200	23.74%	\$ 385,569	\$ 2,009,769
5	15 FLOODWAY CONTROL AND DIVERSION STRUCTURES	Interior Drainage	\$ 332,400	21.47%	\$ 71,370	\$ 403,770
6	18 CULTURAL RESOURCE PRESERVATION	Cultural Resources	\$ 256,000	35.91%	\$ 91,932	\$ 347,932
7			\$ -	0.00%	\$ -	\$ -
8			\$ -	0.00%	\$ -	\$ -
9			\$ -	0.00%	\$ -	\$ -
10			\$ -	0.00%	\$ -	\$ -
11			\$ -	0.00%	\$ -	\$ -
12	All Other (less than 10% of construction costs)	Remaining Construction Items	\$ -	0.0%	\$ -	\$ -
13	30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	\$ 4,432,400	28.96%	\$ 1,283,666	\$ 5,716,066
14	31 CONSTRUCTION MANAGEMENT	Construction Management	\$ 2,954,900	19.56%	\$ 578,089	\$ 3,532,989
XX	FIXED DOLLAR RISK ADD (EQUALLY DISPERSED TO ALL, MUST INCLUDE JUSTIFICATION SEE BELOW)				\$ -	

Totals								
	Real Estate	\$	20,583,400		25.00%	\$	5,145,850	\$ 25,729,250.00
	Total Construction Estimate	\$	25,772,500		29.39%	\$	7,573,680	\$ 33,346,180
	Total Planning, Engineering & Design	\$	4,432,400		28.96%	\$	1,283,666	\$ 5,716,066
	Total Construction Management	\$	2,954,900		19.56%	\$	578,089	\$ 3,532,989
Total			\$ 53,743,200		27.13%	\$	14,581,285	\$ 68,324,485
Range Estimate (\$000's)				Base		50%		80%
				\$53,743k		\$62,492k		\$68,324k

\* 50% based on base is at 50% CL.

**Fixed Dollar Risk Add:** (Allows for additional risk to be added to the risk analysis. Must include justification. Does not allocate to Real Estate.

# Blanchard River Flood Control Study, Findlay Ohio 100 year

Feasibility (Recommended Plan)

Abbreviated Risk Analysis

Meeting Date: 2-Nov-14

Risk Level					
Very Likely	2	3	4	5	5
Likely	1	2	3	4	5
Possible	0	1	2	3	4
Unlikely	0	0	1	2	3
	Negligible	Marginal	Moderate	Significant	Critical

## Risk Register

Risk Element	Feature of Work	Concerns	PDT Discussions & Conclusions (Include logic & justification for choice of Likelihood & Impact)	Impact	Likelihood	Risk Level
<b>Project Scope Growth</b>						<b>Maximum Project Growth 60%</b>
PS-1	Water Control Structure	Potential for scope growth, added features and quantities?	The Dam maybe a smaller structure or gated structure with wier.	Negligible	Unlikely	0
PS-2	Streams & Wetland Mitigations	Potential for scope growth, added features and quantities?	Desk top determinations expect wetland impacts to decrease.	Negligible	Likely	1
PS-3	Diversion Channel	Potential for scope growth, added features and quantities?	Preliminary design, alignment not confirmed. Flow control structures not in conceptual design. Possible need for stone armoring. Data gaps in top of bed rock elivations.	Marginal	Likely	2
PS-4	Levees	Potential for scope growth, added features and quantities?	Preliminary design, alignment not confirmed. Consider design with low risk of change.	Marginal	Possible	1
PS-5	Interior Drainage	Potential for scope growth, added features and quantities?	Preliminary design, may not apply to the final design.	Negligible	Unlikely	0
PS-6	Cultural Resources	Potential for scope growth, added features and quantities?	The risk could be higher if if significant cultural resources are found once ROE are obtained.	Significant	Possible	3
PS-7		Potential for scope growth, added features and quantities?	Question the limit of the area, types of measures which can apply to each structure and the number of structures.	Moderate	Likely	3
PS-8	0			Negligible	Unlikely	0
PS-9	0			Negligible	Unlikely	0
PS-10	0			Negligible	Unlikely	0
PS-11	0			Negligible	Unlikely	0
PS-12	Remaining Construction Items			Negligible	Unlikely	0
PS-13	Planning, Engineering, & Design	Potential for scope growth, added features and quantities?	Inhouse plans and specs. Design tasks have been pushed from feasibility to PED	Moderate	Likely	3

PS-14	Construction Management	Potential for scope growth, added features and quantities?	Inhouse oversite.	Negligible	Likely	1
<b>Acquisition Strategy</b>						<b>Maximum Project Growth</b>
AS-1	Water Control Structure	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-2	Streams & Wetland Mitigations	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-3	Diversion Channel	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-4	Levees	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-5	Interior Drainage	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-6	Cultural Resources	Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-7		Contracting plan not firmly established.	Assuming free and open aquisition and low bid.	Marginal	Unlikely	0
AS-8	0			Negligible	Unlikely	0
AS-9	0			Negligible	Unlikely	0
AS-10	0			Negligible	Unlikely	0
AS-11	0			Negligible	Unlikely	0
AS-12	Remaining Construction Items			Negligible	Unlikely	0
AS-13	Planning, Engineering, & Design	Contracting plan not firmly established.	Inhouse design, therefore marginal concern.	Marginal	Possible	1

AS-14	Construction Management	Contracting plan not firmly established.	Inhouse oversight, therefore marginal concern.	Marginal	Possible	1
<b>Construction Elements</b>				<b>Maximum Project Growth</b>		<b>30%</b>
CON-1	Water Control Structure	The construction is not complicated.	The construction is not complicated, typical means and methods.	Marginal	Possible	1
CON-2	Streams & Wetland Mitigations	The construction is not complicated.	The construction is not complicated, typical means and methods.	Marginal	Possible	1
CON-3	Diversion Channel	The construction is not complicated.	The construction is not complicated, typical means and methods. Potential abandoned oil and gas wells	Moderate	Possible	2
CON-4	Levees	The construction is not complicated.	The construction is not complicated, typical means and methods.	Marginal	Possible	1
CON-5	Interior Drainage	The construction is not complicated.	The construction is not complicated, typical means and methods.	Marginal	Possible	1
CON-6	Cultural Resources	The construction is not complicated.	The risk could be higher if significant cultural resources are found once ROE are obtained.	Moderate	Possible	2
CON-7		The construction is not complicated.	The construction is not complicated, typical means and methods.	Marginal	Possible	1
CON-8	0			Negligible	Unlikely	0
CON-9	0			Negligible	Unlikely	0
CON-10	0			Negligible	Unlikely	0
CON-11	0			Negligible	Unlikely	0
CON-12	Remaining Construction Items			Negligible	Unlikely	0
CON-13	Planning, Engineering, & Design	The construction is not complicated.	Inhouse design, therefore marginal concern.	Marginal	Possible	1
CON-14	Construction Management	The construction is not complicated.	Inhouse oversight, therefore marginal concern.	Marginal	Possible	1
<b>Quantities for Current Scope</b>				<b>Maximum Project Growth</b>		<b>20%</b>
Q-1	Water Control Structure	Level of confidence based on design and assumptions	The Dam maybe a smaller structure or gated structure with wier.	Marginal	Possible	1

Q-2	Streams & Wetland Mitigations	Level of confidence based on design and assumptions	Desk top determinations expect wetland impacts to decrease and stream impacts to remain the same or increase.	Marginal	Possible	1
Q-3	Diversion Channel	Level of confidence based on design and assumptions	Preliminary design, alignment not confirmed. Flow control structures not in conceptual design. Possible need for stone armoring. Data gaps in top of bed rock elevations. Road crossing may need to be added.	Marginal	Likely	2
Q-4	Levees	Level of confidence based on design and assumptions	Preliminary design, alignment not confirmed. Consider design with low risk of change.	Marginal	Likely	2
Q-5	Interior Drainage	Level of confidence based on design and assumptions	Preliminary design, may not apply to the final design.	Marginal	Likely	2
Q-6	Cultural Resources	Level of confidence based on design and assumptions	The risk could be higher if significant cultural resources are found once ROE are obtained.	Marginal	Likely	2
Q-7		Level of confidence based on design and assumptions	Question the limit of the area, types of measures which can apply to each structure and the number of structures. Assuming the structure numbers to go down.	Negligible	Unlikely	0
Q-8	0			Negligible	Unlikely	0
Q-9	0			Negligible	Unlikely	0
Q-10	0			Negligible	Unlikely	0
Q-11	0			Negligible	Unlikely	0
Q-12	Remaining Construction Items			Negligible	Unlikely	0
Q-13	Planning, Engineering, & Design	Level of confidence based on design and assumptions	Inhouse design, therefore marginal concern.	Marginal	Possible	1
Q-14	Construction Management	Level of confidence based on design and assumptions	Inhouse oversight, therefore marginal concern.	Marginal	Possible	1
<b>Specialty Fabrication or Equipment</b>						<b>Maximum Project Growth</b>
FE-1	Water Control Structure	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
FE-2	Streams & Wetland Mitigations	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
FE-3	Diversion Channel	No unusual parts, material or equipment manufactured or installed?	Assuming rock excavation is avoidable, this may not be the case. No unusual parts, material or equipment manufactured or installed?	Moderate	Unlikely	1
FE-4	Levees	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0



FE-5	Interior Drainage	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
FE-6	Cultural Resources	No unusual parts, material or equipment manufactured or installed?	If archeological impacts are found the risk could be higher,specility excavation equipment maybe required.	Moderate	Possible	2
FE-7		No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
FE-8	0			Negligible	Unlikely	0
FE-9	0			Negligible	Unlikely	0
FE-10	0			Negligible	Unlikely	0
FE-11	0			Negligible	Unlikely	0
FE-12	Remaining Construction Items			Negligible	Unlikely	0
FE-13	Planning, Engineering, & Design	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
FE-14	Construction Management	No unusual parts, material or equipment manufactured or installed?	No unusual parts, material or equipment manufactured or installed?	Negligible	Unlikely	0
<b>Cost Estimate Assumptions</b>						<b>Maximum Project Growth</b>
						<b>35%</b>
EST-1	Water Control Structure	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-2	Streams & Wetland Mitigations	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-3	Diversion Channel	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-4	Levees	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-5	Interior Drainage	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-6	Cultural Resources	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-7		Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-8	0			Negligible	Unlikely	0

EST-9	0			Negligible	Unlikely	0
EST-10	0			Negligible	Unlikely	0
EST-11	0			Negligible	Unlikely	0
EST-12	Remaining Construction Items		Parametric estimate unit prices appear reasonable.	Negligible	Unlikely	0
EST-13	Planning, Engineering, & Design	Parametric estimate, lack confidence in unit prices.	Parametric estimate unit prices appear reasonable.	Marginal	Possible	1
EST-14	Construction Management	Parametric estimate, lack confidence in unit prices.		Marginal	Possible	1
<b>External Project Risks</b>						<b>Maximum Project Growth</b>
						<b>40%</b>
EX-1	Water Control Structure	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change. ODNR dam safety permitting not ensured.	Moderate	Likely	3
EX-2	Streams & Wetland Mitigations	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Moderate	Likely	3
EX-3	Diversion Channel	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Moderate	Likely	3
EX-4	Levees	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Moderate	Likely	3
EX-5	Interior Drainage	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Moderate	Likely	3
EX-6	Cultural Resources	Political influences, lack of support, obstacles.	Obstacles in obtaining real estate interest may be encountered. SHPO coordination is required.	Marginal	Likely	2
EX-7		Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Moderate	Likely	3
EX-8	0			Negligible	Unlikely	0
EX-9	0			Negligible	Unlikely	0
EX-10	0			Negligible	Unlikely	0
EX-11	0			Negligible	Unlikely	0
EX-12	Remaining Construction Items			Negligible	Unlikely	0

EX-13	Planning, Engineering, & Design	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Marginal	Likely	2
EX-14	Construction Management	Political influences, lack of support, obstacles.	Lack of public support, obstacles in obtaining real estate interest may be encountered. Political influence and regulatory agency concurrence may change.	Marginal	Likely	2

### Abbreviated Risk Analysis

## Risk Evaluation

WBS	Potential Risk Areas	Project Scope Growth	Acquisition Strategy	Construction Elements	Quantities for Current Scope	Specialty Fabrication or Equipment	Cost Estimate Assumptions	External Project Risks	Cost in Thousands
WBS 01, 02 & 08 LANDS AND DAMAGES	Real Estate								\$20,583
15 FLOODWAY CONTROL AND DIVERSION	Water Control Structure	0	0	1	1	0	1	3	\$1,241
06 FISH AND WILDLIFE FACILITIES	Streams & Wetland Mitigations	1	0	1	1	0	1	3	\$1,406
09 CHANNELS AND CANALS (Except Navigation Ports and Harbors)	Diversion Channel	2	0	2	2	1	1	3	\$20,913
11 LEVEES AND FLOODWALLS	Levees	1	0	1	2	0	1	3	\$1,624
15 FLOODWAY CONTROL AND DIVERSION STRUCTURES	Interior Drainage	0	0	1	2	0	1	3	\$332
18 CULTURAL RESOURCE PRESERVATION	Cultural Resources	3	0	2	2	2	1	2	\$256
0		3	0	1	0	0	1	3	\$0
0	0	0	0	0	0	0	0	0	\$0
0	0	0	0	0	0	0	0	0	\$0
0	0	0	0	0	0	0	0	0	\$0
0	0	0	0	0	0	0	0	0	\$0
All Other (less than 10% of construction costs)	Remaining Construction Items	0	0	0	0	0	0	0	\$0
30 PLANNING, ENGINEERING, AND DESIGN	Planning, Engineering, & Design	3	1	1	1	0	1	2	\$4,432
31 CONSTRUCTION MANAGEMENT	Construction Management	1	1	1	1	0	1	2	\$2,955

**\$33,160**

## Risk

\$	1,758	\$	154	\$	2,720	\$	949	\$	510	\$	675	\$	2,668
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**\$9,435**

### Fixed Dollar Risk Allocation

\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
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**\$0**

Risk

\$	1,758	\$	154	\$	2,720	\$	949	\$	510	\$	675	\$	2,668
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**\$9,435**

Total

**\$42,595**